Claims

1. A device for attaching to a living subject, comprising a first sensor, a second sensor, a processor, and a storage device, said a first sensor for attaching to a first body segment above a hip joint, said second sensor for attaching to a second body segment below the hip joint, wherein said first sensor and said second sensor each comprise an inclination measuring device, wherein data from said first sensor and from said second sensor is processed in said processor and stored in said storage device for distinguishing lying, sitting, and standing positions.

2. A device as recited in claim 1, wherein said inclination measuring device comprises a solid state device.

3. A device as recited in claim 2, wherein said inclination measuring device comprises a dc accelerometer.

4. A device as recited in claim 1, wherein said inclination measuring device comprises three accelerometers orthogonally mounted.

5. A device as recited in claim 1, wherein said inclination measuring device further comprises a magnetometer.

6. A device as recited in claim 5, wherein said inclination measuring device comprises a plurality of magnetometers.

7. A device as recited in claim 1, wherein said magnetometer data is for providing direction with respect to the earth's magnetic field.

8. A device as recited in claim 1, wherein data from said first sensor is subtracted from data from said second sensor.

9. A device as recited in claim 8, wherein said subtraction is to determine a difference in orientation.

10. A device as recited in claim 8, wherein said first sensor and said second sensor are for measuring range of motion of said second body segment with respect to said first body segment.

11. A device as recited in claim 10, wherein said range of motion measurement data is analyzed for change of range of motion over time.

12. A device as recited in claim 11, wherein initial values of said time dependent data are tared out to provide change from said initial values.

13. A device as recited in claim 1, wherein said storage device comprises a solid state device.

14. A device as recited in claim 13, wherein said storage device comprises a non-volatile memory device.

15. A device as recited in claim 1, further comprising a feedback mechanism

16. A device as recited in claim 16, further comprising a housing, wherein said first sensor, said storage device, said processor, and said feedback mechanism are all within said housing.

17. A device as recited in claim 15, further comprising a housing separate from said first sensor and said second sensor, wherein said feedback mechanism is within said housing.

18. A device as recited in claim 17, wherein said first sensor and said second sensor are wirelessly connected to said housing containing said feedback mechanism.

19. A device as recited in claim 18, wherein said wireless connection is an RF connection.

20. A device as recited in claim 15, wherein said feedback mechanism is activated if a preset range of motion threshold has been exceeded too many times.

21. A device as recited in claim 15, wherein said feedback mechanism provides vibratory or auditory feedback.

22. A device as recited in claim 15, wherein said feedback mechanism comprises a piezo-electric buzzer or an electromagnetic shaker.

23. A device as recited in claim 15, wherein said feedback mechanism provides feedback to warn of a problem, discourage a movement, support a desired result, or encourage a movement.

24. A device as recited in claim 23, wherein said problem comprises repeatedly exceeding a pre-programmed inclination angle.

25. A device as recited in claim 1, wherein said processor comprises a microprocessor, a

signal processor, or a personal computer.

26. A device as recited in claim 1, wherein said data comprises body segment orientation data as a function of time.

27. A device as recited in claim 1, wherein said data comprises posture data as a function of time.

28. A device as recited in claim 1, wherein said data is used to adjust physical therapy.

29. A device as recited in claim 1, wherein said device further comprises a data entry system.

30. A device as recited in claim 29, wherein said data entry system comprises a button.

31. A device as recited in claim 29, wherein said data entry system is for recording the presence of pain.

32. A device as recited in claim 29, wherein time, date or other data are recorded when said data entry system is used.

33. A device as recited in claim 1, wherein said data is displayed as a histogram showing number of inclinations at each angle range during a time period.

34. A device as recited in claim 1, wherein said data is displayed as inclination v. time.

35. A device as recited in claim 1, further comprising a digital filter.

36. A device as recited in claim 35, wherein said digital filter is for reducing effect of linear accelerations on the data.

37. A device as recited in claim 35, wherein said digital filter comprises a low pass filter or a high pass filter.

38. A device as recited in claim 1, further comprising a high pass filter, wherein output of said accelerometers that passes through said high pass filter is subsequently integrated and used to compute a resultant velocity which is used to calculate energy used.

39. A device as recited in claim 1, wherein said device is further for determining body posture in said sitting position.

40. A device comprising a sensor, a processor, a storage device, and a feedback mechanism wherein data from said sensor is processed in said processor to provide an output, wherein said output is stored in said storage device as a function of time, and wherein multiple points of said time dependent output stored in said storage device are processed in said processor, wherein said processor directs said feedback mechanism to provide information or instruction in response to said multiple points of time dependent output indicating too little activity or too small a range of motion of a joint during an interval of time, or repetitive activity that can cause repetitive stress injury or too many motions beyond a specified range of motion during an interval of time or too much vibration for too long a time.

41. A device as recited in claim 1, wherein said sensor comprises an inclination measuring device

42. A device as recited in claim 41, wherein said inclination measuring device comprises a solid state device.

43. A device as recited in claim 42, wherein said inclination measuring device comprises a dc accelerometer.

44. A device as recited in claim 43, wherein said inclination measuring device comprises three accelerometers orthogonally mounted.

45. A device as recited in claim 43, wherein said inclination measuring device further comprises a magnetometer.

46. A device as recited in claim 45, wherein said inclination measuring device comprises

a plurality of magnetometers.

47. A device as recited in claim 45, wherein said magnetometer is for providing direction with respect to the earth's magnetic field.

48. A device as recited in claim 40, further comprising a network of said sensors.

49. A device as recited in claim 48, wherein a first sensor of said network of sensors is for placing on a first body segment and a second sensor of said network of sensors is for placing on a second body segment connected to said first body segment.

50. A device as recited in claim 49, wherein output from said sensor is subtracted from data from said second sensor to provide angle of a joint there between.

51. A device as recited in claim 49, wherein said first sensor and said second sensor are for measuring range of motion of said second body segment with respect to said first body segment.

52. A device as recited in claim 51, wherein said range of motion measurement data is analyzed for change of range of motion over time.

53. A device as recited in claim 51, wherein an initial values of said time dependent data is tared out for said first sensor and said second sensor to provide change from said initial value.

54. A device as recited in claim 40, wherein said storage device comprises a solid state device.

55. A device as recited in claim 54, wherein said storage device comprises a non-volatile memory device.

56. A device as recited in claim 1, wherein said storage device and said processor are within the same housing.

57. A device as recited in claim 40, further comprising a housing, wherein said sensor, said storage device, said processor, and said feedback mechanism are all within said housing.

58. A device as recited in claim 40, further comprising a housing separate from said sensor, wherein said feedback mechanism is within said separate housing.

59. A device as recited in claim 58, wherein said sensor is wirelessly connected to said housing containing said feedback mechanism.

60. A device as recited in claim 59, wherein said wireless connection is an RF connection.

61. A device as recited in claim 40, wherein said feedback mechanism is activated if a preset range of motion threshold has been exceeded more than a specified number of times.

62. A device as recited in claim 40, wherein said feedback mechanism provides vibratory or auditory feedback.

63. A device as recited in claim 40, wherein said feedback mechanism comprises a piezo-electric buzzer or an electromagnetic shaker.

64. A device as recited in claim 40, wherein said feedback mechanism provides feedback to warn of a problem, discourage a movement, support a desired result, or encourage a movement.

65. A device as recited in claim 64, wherein said problem comprises repeatedly exceeding a pre-programmed inclination angle.

66. A device as recited in claim 40, wherein said processor comprises a microprocessor, a signal processor, or a personal computer.

67. A device as recited in claim 40, wherein said output comprises body segment orientation data as a function of time.

68. A device as recited in claim 40, wherein said output comprises posture data as a function of time.

69. A device as recited in claim 40, wherein said output is used to adjust physical therapy.

70. A device as recited in claim 40, wherein said device further comprises a data entry system.

71. A device as recited in claim 70, wherein said data entry system comprises a button.

72. A device as recited in claim 70, wherein said data entry system is for recording the presence of pain.

73. A device as recited in claim 70, wherein time, date or other data are recorded when

said data entry system is used.

74. A device as recited in claim 40, wherein said output is displayed as a histogram showing number of inclinations at each angle range during a time period.

75. A device as recited in claim 40, wherein said output is displayed as inclination v. time.

76. A device as recited in claim 40, further comprising a digital filter.

77. A device as recited in claim 76, wherein said digital filter is for reducing effect of linear accelerations on the data.

78. A device as recited in claim 76, wherein said digital filter comprises a low pass filter.

79. A device as recited in claim 40, further comprising a high pass filter, wherein output of said accelerometers that passes through said high pass filter is subsequently integrated and used to compute a resultant velocity which is used to calculate energy used.

80. A device as recited in claim 40, wherein said device is further for determining body posture in said sitting position.

81. A device as recited in claim 40, wherein said device is wearable.

82. A device as recited in claim 40, wherein said device records output over a series of intervals of time.